



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : H04Q 7/38, 7/22	A3	(11) International Publication Number: WO 98/20697 (43) International Publication Date: 14 May 1998 (14.05.98)
(21) International Application Number: PCT/US97/20135 (22) International Filing Date: 6 November 1997 (06.11.97) (30) Priority Data: 08/743,689 6 November 1996 (06.11.96) US (71) Applicant (for all designated States except US): BELL NORTHERN RESEARCH, INC. [US/US]; 35 Davis Drive, Research Triangle Park, NC 27709 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): SUBRAMANIAN, Sairam [IN/US]; 3951 High Grove Drive, Dallas, TX 75220 (US). MADHAVAPEDDY, Seshu, R. [IN/US]; 2200 Waterview #2024, Richardson, TX 75080 (US). MONTOYA, Alexander, J. [US/US]; 14604 Cambridge Court, Addison, TX 75244 (US). LEE, Hee, C. [KR/US]; 6417 Glenhollow Drive, Plano, TX 75093 (US). CURRIN, Steven, J. [US/US]; 805 Willow Brook, Allen, TX 75002 (US). SARKAR, Falguni [IN/US]; 12111 Audelia Road #1512, Dallas, TX 75243 (US). (74) Agent: CRANE, John, D.; Northern Telecom Limited, Patent Dept., Mail Stop 991/04/A40, P.O. Box 833858, Richardson, TX 75083-3858 (US).	(81) Designated States: CA, US, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i> (88) Date of publication of the international search report: 8 October 1998 (08.10.98)	
(54) Title: METHOD FOR REDUCING PAGING LOAD IN A CELLULAR COMMUNICATION SYSTEM		
(57) Abstract		
<p>A method for reducing the paging load in a cellular communication system is described. The cell C with the largest paging load L is first identified. Since this cell is usually included in more than one paging zone, the paging zones including cell C are identified. Thereafter, cell C is removed tentatively from each identified zone and a ratio R calculated which represents the decrease in loading on cell C due to being removed from zone z divided by the maximum increase in loading on any other cell in the network. The zone for which the ratio R is the largest is the best candidate for removing cell C therefrom. After doing so tentatively, the cell C' with the largest paging load L' thereon is identified. If the loading L is greater than L', cell C is removed permanently from the zone having the highest ratio R therefore and the process is repeated until L' is greater than L at which point the process is stopped without removing cell C from the zone with the highest ratio R.</p>		

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 97/20135

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 6 H04Q7/38 H04Q7/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	MADHAVAPEDDY S ET AL: "ADAPTIVE PAGING ALGORITHMS FOR CELLULAR SYSTEMS" 25 July 1995, PROCEEDINGS OF THE VEHICULAR TECHNOLOGY CONFERENCE, CHICAGO, JULY 25 - 28, 1995, VOL. VOL. 2, NR. CONF. 45, PAGE(S) 976 - 980, INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS XP000551679 see page 977, left-hand column, paragraph 3 - page 978, left-hand column, paragraph 4 see page 978, right-hand column, line 31 - line 48 <p style="text-align: center;">--- -/--</p>	1-17

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

27 July 1998

Date of mailing of the international search report

31/07/1998

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

Casals Castañé, J

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 97/20135

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>ROSE C ET AL: "ENSEMBLE POLLING STRATEGIES FOR MOBILE COMMUNICATIONS NETWORKS"</p> <p>28 April 1996 , 1996 IEEE 46TH. VEHICULAR TECHNOLOGY CONFERENCE, MOBILE TECHNOLOGY FOR THE HUMAN RACE ATLANTA, APR. 28 - MAY 1, 1996, VOL. VOL. 1, NR. CONF. 46, PAGE(S) 101 - 105 , INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS XP000594285</p> <p>see page 102, left-hand column, paragraph 3.1 - page 103, left-hand column, line 43</p> <p>-----</p>	1,10